

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR. JANUARY, 1981

C = 6

I = 134

(L) UNSHIELTERED DISTANCE IN FEET	SURFACE - K = 1.0											
	(V)** - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE											
0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	8.0	6.4	4.3	2.4	1.0							
8000	8.0	6.4	4.3	2.4	1.0							
6000	8.0	6.4	4.3	2.4	1.0							
4000	8.0	6.4	4.3	2.4	1.0							
3000	8.0	6.4	4.3	2.4	1.0							
2000	8.0	6.4	4.3	2.4	1.0							
1000	6.9	5.5	3.6	2.0	0.8							
800	6.6	5.2	3.4	1.9	0.7							
600	5.3	4.1	2.7	1.4	0.6							
400	4.4	3.5	2.2	1.2	0.4							
300	3.9	3.0	1.9	0.9								
200	2.9	2.3	1.4	0.6								
150	2.1	1.6	0.9	0.4								
100	1.7	1.3	0.7									
80	1.3	1.0	0.5									
60	0.9	0.5										
50	0.8	0.5										
40	0.6	0.4										
30												
20												
10												

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 6

I = 134

(L) UNSHIELTERED DISTANCE IN FEET	SURFACE - K = 0.9											
	(V)** - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE											
0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	7.2	5.8	3.8	2.1	0.8							
8000	7.2	5.8	3.8	2.1	0.8							
6000	7.2	5.8	3.8	2.1	0.8							
4000	7.2	5.8	3.8	2.1	0.8							
3000	7.2	5.8	3.8	2.1	0.8							
2000	6.9	5.5	3.6	2.0	0.8							
1000	5.6	4.5	2.9	1.6	0.6							
800	4.9	3.8	2.4	1.3	0.5							
600	4.3	3.4	2.1	1.1	0.4							
400	3.6	2.8	1.7	0.8								
300	3.0	2.3	1.4	0.7								
200	2.0	1.6	0.8									
150	1.6	1.2	0.7									
100	1.2	0.9	0.5									
80	1.0	0.6										
60	0.7	0.4										
50	0.6	0.3										
40												
30												
20												
10												

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 6

I = 134

(L) UNSHIELTERED DISTANCE IN FEET	SURFACE - K = 0.8											
	(V)** - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE											
0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	6.4	5.1	3.3	1.8	0.7							
8000	6.4	5.1	3.3	1.8	0.7							
6000	6.4	5.1	3.3	1.8	0.7							
4000	6.4	5.1	3.3	1.8	0.7							
3000	6.4	5.1	3.3	1.8	0.7							
2000	6.0	4.7	3.1	1.7	0.7							
1000	4.7	3.7	2.3	1.2	0.5							
800	4.4	3.4	2.2	1.1	0.4							
600	3.8	2.9	1.8	0.9								
400	3.0	2.3	1.4	0.7								
300	2.4	1.8	1.1	0.5								
200	1.7	1.3	0.7									
150	1.3	1.0	0.5									
100	0.9	0.5										
80	0.8	0.5										
60	0.5	0.3										
50												
40												
30												
20												
10												

\* NOTE: SOIL LOSS FOR VALUES WHERE 'E' IS LESS THAN 0.1 OR GREATER THAN 440.0 ARE NOT SHOWN; OTHER VALUES NOT SHOWN ARE INVALID

\*\* NOTE: VALUES SHOWN ARE FLAT SMALL GRAIN EQUIVALENT, NOT 'V'

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 6

I = 134

SURFACE - K = 0.7

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	5.6	4.4	2.9	1.6	0.6								
8000	5.6	4.4	2.9	1.6	0.6								
6000	5.6	4.4	2.9	1.6	0.6								
4000	5.6	4.4	2.9	1.6	0.6								
3000	5.6	4.4	2.9	1.6	0.6								
2000	5.0	3.9	2.5	1.3	0.5								
1000	4.2	3.3	2.1	1.1	0.4								
800	3.9	3.0	1.9	0.9									
600	3.2	2.5	1.5	0.7									
400	2.3	1.8	1.1	0.5									
300	1.8	1.4	0.8										
200	1.4	1.0	0.6										
150	1.0	0.6											
100	0.6	0.4											
80	0.6	0.4											
60													
50													
40													
30													
20													
10													

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 6

I = 134

SURFACE - K = 0.6

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	4.8	3.8	2.4	1.3	0.5								
8000	4.8	3.8	2.4	1.3	0.5								
6000	4.8	3.8	2.4	1.3	0.5								
4000	4.8	3.8	2.4	1.3	0.5								
3000	4.7	3.7	2.3	1.2	0.5								
2000	4.4	3.4	2.2	1.1	0.4								
1000	3.6	2.8	1.7	0.8									
800	3.2	2.5	1.5	0.7									
600	2.5	1.9	1.2	0.5									
400	1.9	1.4	0.8										
300	1.6	1.2	0.6										
200	1.1	0.8	0.4										
150	0.6	0.5											
100	0.6	0.4											
80													
60													
50													
40													
30													
20													
10													

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 6

I = 134

SURFACE - K = 0.5

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	4.0	3.1	2.0	1.0	0.4								
8000	4.0	3.1	2.0	1.0	0.4								
6000	4.0	3.1	2.0	1.0	0.4								
4000	3.7	2.9	1.8	0.9									
3000	3.5	2.8	1.7	0.8									
2000	3.3	2.6	1.6	0.8									
1000	2.2	1.7	1.0	0.5									
800	2.0	1.5	0.8										
600	1.7	1.3	0.7										
400	1.4	1.0	0.6										
300	1.1	0.8	0.4										
200	0.8	0.5											
150	0.6	0.4											
100													
80													
60													
50													
40													
30													
20													
10													

\* NOTE: SOIL LOSS FOR VALUES WHERE 'E' IS LESS THAN 0.1 OR GREATER THAN 440.0 ARE NOT SHOWN; OTHER VALUES NOT SHOWN ARE INVALID

\*\* NOTE: VALUES SHOWN ARE FLAT SMALL GRAIN EQUIVALENT, NOT 'V'

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 4

I = 86

SURFACE - K = 1.0

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	3.4	2.7	1.7	0.8									
8000	3.4	2.7	1.7	0.8									
6000	3.4	2.7	1.7	0.8									
4000	3.4	2.7	1.7	0.8									
3000	3.4	2.6	1.6	0.8									
2000	3.1	2.4	1.5	0.7									
1000	2.2	1.7	1.0	0.5									
800	2.0	1.5	0.8										
600	1.7	1.3	0.7										
400	1.3	1.0	0.5										
300	1.0	0.6											
200	0.8	0.4											
150	0.5	0.3											
100													
80													
60													
50													
40													
30													
20													
10													

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 4

I = 86

SURFACE - K = 0.9

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	3.1	2.4	1.5	0.7									
8000	3.1	2.4	1.5	0.7									
6000	3.1	2.4	1.5	0.7									
4000	3.0	2.3	1.4	0.7									
3000	2.9	2.2	1.4	0.6									
2000	2.6	2.0	1.2	0.6									
1000	1.9	1.4	0.8										
800	1.7	1.3	0.7										
600	1.4	1.1	0.6										
400	1.1	0.8	0.4										
300	0.9	0.5											
200	0.7	0.4											
150													
100													
80													
60													
50													
40													
30													
20													
10													

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR JANUARY, 1981

C = 4

I = 86

SURFACE - K = 0.8

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	2.8	2.1	1.3	0.6									
8000	2.8	2.1	1.3	0.6									
6000	2.8	2.1	1.3	0.6									
4000	2.5	1.9	1.1	0.5									
3000	2.3	1.7	1.0	0.5									
2000	2.1	1.6	1.0	0.4									
1000	1.6	1.2	0.6										
800	1.4	1.1	0.6										
600	1.2	0.9	0.5										
400	0.9	0.5											
300	0.8	0.5											
200	0.5	0.3											
150													
100													
80													
60													
50													
40													
30													
20													
10													

\* NOTE: SOIL LOSS FOR VALUES WHERE 'E' IS LESS THAN C.I OR GREATER THAN 440.0 ARE NOT SHOWN; OTHER VALUES NOT SHOWN ARE INVALID

\*\* NOTE: VALUES SHOWN ARE FLAT SMALL GRAIN EQUIVALENT, NOT 'V'

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR      JANUARY, 1981

C = 4

I = 86

SURFACE - K = 0.7

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	2.4	1.8	1.1	0.5									
8000	2.4	1.8	1.1	0.5									
6000	2.4	1.8	1.1	0.5									
4000	2.2	1.7	1.0	0.5									
3000	2.0	1.5	0.8										
2000	1.8	1.4	0.8										
1000	1.4	1.0	0.6										
800	1.3	0.9	0.5										
600	1.0	0.6											
400	0.8	0.5											
300	0.6	0.4											
200													
150													
100													
80													
60													
50													
40													
30													
20													
10													

(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR      JANUARY, 1981

C = 4

I = 86

SURFACE - K = 0.6

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	2.1	1.6	0.9	0.4									
8000	2.1	1.6	0.9	0.4									
6000	2.1	1.6	0.9	0.4									
4000	1.9	1.4	0.8										
3000	1.8	1.4	0.7										
2000	1.6	1.2	0.7										
1000	1.2	0.9	0.5										
800	1.0	0.6											
600	0.9	0.5											
400	0.7	0.4											
300	0.5	0.3											
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(E)\* SOIL LOSS FROM WIND EROSION IN TONS PER ACRE PER YEAR      JANUARY, 1981

C = 4

I = 86

SURFACE - K = 0.5

(V)\*\* - FLAT SMALL GRAIN RESIDUE IN POUNDS PER ACRE

(L) UNSHIELTERED DISTANCE IN FEET	0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
10000	1.7	1.3	0.7										
8000	1.7	1.3	0.7										
6000	1.7	1.3	0.7										
4000	1.6	1.2	0.6										
3000	1.5	1.1	0.6										
2000	1.2	0.9	0.5										
1000	0.9	0.5											
800	0.8	0.5											
600	0.6	0.4											
400													
300													
200													
150													
100													
80													
60													
50													
40													
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\* NOTE: SOIL LOSS FOR VALUES WHERE 'E' IS LESS THAN 0.1 OR GREATER THAN 440.0 ARE NOT SHOWN; OTHER VALUES NOT SHOWN ARE INVALID

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Table 9. Soil erodibility "I" and barrier height correction factors.

"I" slopes correction factors apply only when the change in slope rises 3 percent or more and the slope length is less than 500 feet long, measured along the prevailing wind erosion direction. Barrier height correction factors apply when the slope rises 3 percent or more down wind from the barrier.

<u>Knoll Facing Wind; Rise in Percent Slope<sup>1</sup> (along prevailing wind erosion direction)</u>	<u>"I" Slope<sup>2</sup> Correction</u>	<u>Barrier Height<sup>3</sup> Correction Factors</u>
3	1.3	0.77
4	1.6	0.72
5	1.9	0.67
6	2.3	0.62
8	3.0	0.56
10	3.6	0.50

- 1 Measure percent and length of slope along the prevailing wind erosion direction.
- 2 The Soil Erodibility, "I", for a flat field is multiplied by the appropriate "I" slope correction factor to obtain the corrected "I", for a slope rise of 3 percent or more and less than 500 feet in length.  
 Example: For a very fine sandy loam soil on a 4 percent rise in steepness of slope, facing the wind, with an "I" value of 86 T/Ac./Yr., multiply  $86 \times 1.6$  (correction factor for 4 percent slope rise, Table 9) = 138, the corrected "I" for this site. Round to 134.
- 3 A barrier on a flat field provides a sheltered distance of 10 times the height of the barrier ( $10H$ ). On flat fields (less than 3% rise) the height and effective height are the same. On slopes with a rise of 3 percent or more, the effective height of the barrier must be adjusted by multiplying the height of the barrier by the barrier height correction factor for the specific slope.  
 Example: A 10-foot barrier on flat land will provide a sheltered distance of  $10 \times 10$  feet. A 10-foot barrier on land with a 4 percent slope rise will have an effective height of  $10 \times 0.72 = 7.2$  feet, and will provide a sheltered distance of  $7.2 \times 10$  or 72 feet.

Figure 1. Soil ridge roughness Kr (Inches)

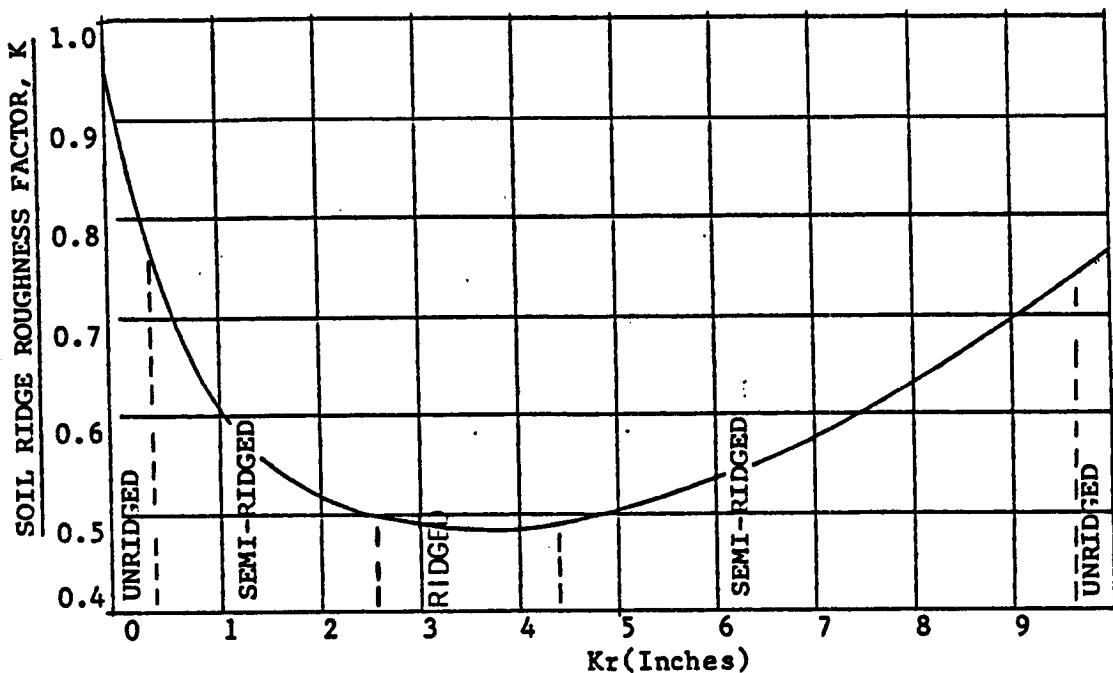


Figure to determine whether a field is smooth, semi-ridged, or ridged.

When Kr is 0.0 to 0.4, or 9.8 inches or more a field surface is considered smooth.

When Kr is 0.5 to 2.6, or 4.5 to 9.7 inches a field surface is considered semi-ridged.

When Kr is 2.7 to 4.4 inches a field surface is considered ridged.

Kr is determined by the following equation.

$$Kr = \frac{\text{denominator of standard ratio} \quad (4)}{\text{denominator of field ratio} \quad (x)} \times \text{height of ridge in inches}$$

Example: Ridge height = 3", distance between ridges = 18"  
then the ratio of ridge height to spacing is 3":18" or 1:6.

The standard ratio is 1:4, then:  $Kr = \frac{4}{6} \times 3" = 2"$  (semi-ridged)

Figure 2. SOIL RIDGE ROUGHNESS

		Furrow Spacing, Inches																	
		3	4	6	8	10	12	14	16	18	20	24	30	36	40	42	48	54	60
Ridge Height, Inches	½	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
	1	SR	SR	SR	SR	S	S	S	S	S	S	S	S	S	S	S	S	S	
	1½	R	SR	S	S	S	S	S	S	S	S								
	2	SR	R	R	SR	SR	SR	SR	SR	SR	S	S	S	S	S	S	S	S	
	2½	SR	SR	R	R	SR	S												
	3	S	SR	SR	SR	R	R	SR											
	3½	S	S	SR	SR	SR	R	R	R	SR									
	4	S	S	S	SR	SR	SR	R	R	R	SR								
	4½	S	S	S	S	SR	SR	SR	SR	R	R	SR							
	5	S	S	S	S	S	SR	SR	SR	SR	R	R	R	SR	SR	SR	SR	SR	
	5½	S	S	S	S	S	SR	SR	SR	SR	R	R	R	SR	SR	SR	SR	SR	
	6	S	S	S	S	S	S	SR	SR	SR	SR	R	R	R	R	R	R	SR	
	7	S	S	S	S	S	S	S	S	SR	SR	SR	SR	R	R	R	R	R	
	8	S	S	S	S	S	S	S	S	S	SR	SR	SR	SR	R	R	R	R	
	9	S	S	S	S	S	S	S	S	S	SR	SR	SR	SR	R	R	R	R	
	10	S	S	S	S	S	S	S	S	S	S	S	S	SR	SR	SR	SR	R	
	11	S	S	S	S	S	S	S	S	S	S	S	S	S	S	SR	SR	R	
	12	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	SR	

S = Smooth

SR = Semi-ridged

R = Ridged

Figure for determining whether a field is smooth, semi-ridged, or ridged.

Developed from Agriculture Handbook No. 346, and Figure 1.

Chart - 1 WIND EROSION RIDGE - ROUGHNESS - "K"  
FROM VARIOUS FURROW SPACINGS AND RIDGE HEIGHTS

